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# Gulf Coast Wetlands: Water and Bed-Sediment Sampling Plan (Pre-Impact)

## Deepwater Horizon (B/P) Oil Spill 2010

### Texas, Louisiana, Mississippi, Alabama, Florida

Draft: May 7, 2010; Revision: May 15, 2010

U.S. Department of the Interior  
U.S. Geological Survey

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USGS plan and protocol for characterization of chemical and biological quality of bottom sediment and water in coastal wetlands and Department of Interior lands for pre-landfall conditions of the Gulf of Mexico Oil Spill

U.S. Geological Survey (USGS) Science Centers in Texas, Louisiana, Mississippi, Alabama, and Florida, in response to a major oil and gas explosion and subsequent oil leak in the northern Gulf of Mexico (GOM) have coordinated efforts to sample water and bottom material from coastal wetlands and Department of Interior (DOI) lands on-shores and on barrier islands that could suffer severe environmental damage if oil from this spill comes ashore. This work will be coordinated through the South Central Area-Central Region, SE Area-Eastern Region, and the Office of Water Quality.

The overall sampling strategy is to collect pre-spill landfall samples to provide baseline data in those priority areas of the northern GOM at highest risk for oil contamination. Our objective is to document what the current conditions are at these sites. We will document the existence of and identify any historic oil present including “fingerprints” of existing oil, PAHs, oil and grease, trace metals, volatile organic compounds, surfactants, DOC characterization, isomeric fingerprinting, bacterial populations capable of digesting oils, and nutrients.

Sediment and water will be collected at the land/water interface from a multitude of environments ranging from coastal wetlands, barrier islands, and coastal sand beaches. All samples will be collected according to methods listed in the USGS. All sampling equipment will be cleaned according to methods listed in the USGS Field Water Quality Techniques manual and stored covered with the appropriate material to prevent sample contamination.

## **Site and Sample Location:**

All water and bottom-material samples will be collected at the land/water interface. Suitable sites include wetlands, barrier islands, shoreline beaches. No samples are to be collected from revetment sites or areas where treated pilings are present.

## **Field notes:**

The following information will be recorded at each site in addition to information required by the USGS *National Field Manual for the Collection of Water-Quality Data*, <http://water.usgs.gov/owq/FieldManual/> (USGS Water-Quality Field Manual). Field crews will record the location of the sampling site using a WAAS-enabled GPS unit. Photographs will be made at all sites in the following fashion: the first photograph will be taken facing north 0°, then east 090°, then south 180°, and then west 270°. Field notes will include comments on the weather, wind speed, wave height, apparent health of vegetation, any organisms present and their conditions, presence of possible contamination, water color, and observed bottom material grain size (i.e. sand, silt, clay, etc) and the amount of organic detritus present at the site.

## ***In situ* water-quality measurements:**

*In-situ* determination of dissolved oxygen, pH, specific electrical conductance/salinity, and water temperature will be recorded at each site using a calibrated multiparameter data sonde.

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## Sample Collection

### Bottom material

Bottom material samples will be collected at the land/water interface (also called the swash zone) from the surface of the bed to a depth of 4-6 inches using either a pre-cleaned Teflon scoop or grab sampler. Sufficient quantities of bottom material will be collected and placed in a clean, white plastic dish pan. The Teflon scoop will be used to mix the bottom material to form a well-mixed composite, which then will be split into the appropriate, labeled, sample containers.

Bottom material for bacterial analyses (1 sample from the swash zone, and one from dry beach sand, if available) will be placed either in a 400-ml WhirlPac bag or appropriately-sized zip loc bag. All samples then will be stored in an ice chest and kept at 4°C until it can be shipped to the appropriate laboratory for analysis. Bottom material samples will be packaged and shipped separately from samples containing other media, such as water, fish tissue, etc. (see section “Shipping”).

### Water

All water samples will be collected near the land/water interface. Water samples will be dipped (in water deep enough not to stir up bottom material during collection) at the water’s surface so as to give an accurate representation of any oil present at the site. Bottles used for the collection of oil and grease will not be rinsed prior to collection to prevent over representation of oil in the sample. All other bottles will be collected according to methods listed in the USGS Water-Quality Field Manual. All water samples will be labeled, treated appropriately, placed in an ice cooler, and chilled to maintain a temperature at or below 4°C (without freezing) until the samples have been received at the designated laboratory. The 125-mL DOC sample also will be kept chilled at 4°C until it is filtered and/or shipped to the appropriate laboratory.

### Benthic Invertebrates

Collect 1 benthic invertebrate sample from each site using a 3 inch pvc pipe inserted 5 cm into the substrate. Extrude the bottom material into a zip loc bag, chill in the field and freeze once you return to the office.

Additional detail added May 13, 2010:

All benthic invertebrate samples will be collected near the land/water interface. A single sediment core used for taxonomic analysis of invertebrates will be collected at each site using a 3 inch PVC coring pipe inserted vertically 5 cm into the substrate. Insertion of the device into the substrate can be facilitated by grinding the outer edge of the pipe to create a beveled edge; the 5 cm sampling depth can be mark on the inside of the pipe using a waterproof black marker. Once the 5 cm depth is reached, carefully slide a spatula (without slots) under the coring pipe to enclose the sample. Be careful not to disturb the sediment inside the coring pipe. A similar application of this device is described in Moulton and others (2002). Carefully remove excess sediment outside of the coring pipe. Extrude the sediment sample contained inside the coring pipe into a re-sealable bag; inspect the inside of the coring pipe and spatula surface containing the sample and place any remaining organisms in the bag using forceps. Remove as much air

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form the bag as possible before sealing. Chill sample bags on ice in the field, then place in freezer upon return to the office. Label each sample bag with the sampling date, name of collector, and sampling location.

Note: alternative modification of coring device (Scott Mize, USGS Louisiana Water Science Center, personal communication): If 3 inch diameter PVC pipe is not available, a suitable coring device can be constructed by cutting the bottom off of a 3 inch diameter plastic sample bottle. The bottle should have a relatively flat bottom and must be cut evenly so as to retain a 5 cm high side of the bottle. Drill a small hole in the center of the bottom; this will allow air to escape when the devise is inserted in the sand. In using this device, vertically insert the device into the sand (with bottom side up) until the bottom is flush with the substrate. Carefully slide a spatula under the device to enclose the sample. A similar application of this device is described in Moulton and others (2002).

## Shipping

All samples will be shipped using chain-of-custody (COC) requirements, using the appropriate forms, tape, and COC shipping labels. Completely tape lid and sign the tape before shipment. Fill out the ARS forms and the chain of custody forms for each lab. We are checking with the research laboratories to determine what forms they require for COC. Chain-of-custody information can be found at <http://wwwnwql.cr.usgs.gov/dyn.shtml?coc> The COC form is at <http://wwwnwql.cr.usgs.gov/htmls/cocform.pdf> and COC can be purchased through OneStop using item number Q150FLD.

Bottom material samples will be shipped according to USDA guidelines for shipping regulated soils, as described at: <http://wwwnwql.cr.usgs.gov/rn.shtml?09-019>. Bottom Material samples should be shipped separately; the bottom material samples **MUST NOT** be shipped in coolers with other media (water, tissue, etc). The required USDA permit is to be included with all bottom material samples that are being shipped to a laboratory.

It is necessary for each WSC to use their user code for tracking purposes of data and charges. (Ex: Louisiana needs to use user code LA).

## Account Number

In order to consolidate the charges related to the Gulf Oil Spill, the NWQL has set-up account number 4569-08000 for all charges (samples and supplies).

## Quality Assurance

Field preparation, sample collection, and physical measurements of water quality will be conducted according to protocols described in the USGS National Field Manual. Collect triplicate samples and one field blank at 10 percent of your sites. The field blank is essentially a bottle blank since there is not any sampling equipment being used. Remember to record all calibration checks on the multi-parameter meters.

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### Safety:

All field and laboratory personnel should follow the safety guidelines for your Science Center. In addition, all crews by wearing the appropriate gloves for the sample collection will be protecting themselves from possible exposure to flesh-eating bacteria whose presence has been documented in the coastal areas of the GOM. Further, personnel should use anti-bacterial soap if their skin is compromised by cuts or scratches during collection of samples.

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Samples to be collected are listed below:

USGS Laboratory	Analysis	Matrix	Collection	NWQL Schedule	Analytical method
National Water Quality Lab	Semi volatiles - PAHs-	Bottom Material	1L glass bed organic bottle (wide-mouthed) - 100 grams	5506, 5507	GCMS - GS O-5506-06
National Water Quality Lab	Semi volatiles - PAHs	Whole Water	1 L narrow amber glass organic bottle	1383	GCMS - GS O-3116-87
National Water Quality Lab	Trace metals	Whole Water	1 125 ml acid-rinsed bottle	2317	ICP/MS – GS I-4471-97
Dr. Art Horowitz, Norcross, GA	Trace metals, TN, TP, TS	Bottom Material	Colorless Ziploc bags – double bagged, chilled and kept from light – 500 grams	NA	
Test America Labs	BTEX	Whole Water	3 -VOA vials	NA	
Test America Labs	Oil and Grease	Whole Water	2 1 L narrow amber glass bottle	NA	
Test America Labs	Oil and Grease	Bottom Material	1 500 ml amber bed glass organic bottle (wide-mouthed) (8 oz required, but bottle size not available)	NA	
Columbia Environmental Research Center, Columbia, MO	Toxicity	Whole Water	2 1L narrow amber glass bottle-water	NA	
Columbia Environmental Research Center, Columbia, MO	Toxicity	Bottom Material	1 L glass bed organic (wide-mouthed)	NA	
Dr Robert Rosenbauer, Menlo Park, CA	Oil fingerprinting	Bottom Material	2 500 ml amber bed glass organic bottle (wide-mouthed)	NA	
National Water Quality Lab	VOCs	Whole Water	VOC septum vials	2021	GCMS - GS O-5506-06
A. Demopoulos, Gainesville, FL	Benthic Inverts	Bottom Material	3 inch core 5 cm thick: Zip loc bag-chill/freeze		

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Dr. John Lisle, St. Petersburg, FL	Bacteria	Bottom Material, land/water interface (swash)	400 ml whirl pac or ziploc bag-chilled	NA
Dr. John Lisle, St. Petersburg, FL	Bacteria	Bottom Material, Dry Beach Sand	400 ml whirl pac or ziploc bag-chilled	NA
National Water Quality Lab	Nutrients	Whole Water	125 ml plastic bottle; H <sub>2</sub> SO <sub>4</sub> (or just chilled and lab will acidify)	LC2188, LC1986, LC1984      EPA 350.1/GS Method ID: I- 4515-91; I-4610-91
Dr. Jeff McCoy, National Water Quality Lab	Surfactant	Whole Water	1 Liter Glass	GCMS - GS O-3116-87
Dr. George Aiken, Boulder, CO	DOC-	Whole Water	1 125 ml glass DOC bottle	NA
Dr. Robert Eganhouse, Reston, VA	Isomeric fingerprinting	Whole Water	1 Liter Glass	NA
Dr. Robert Eganhouse, Reston, VA	Isomeric fingerprinting	Bottom Material	8 oz wide-mouth jar	NA

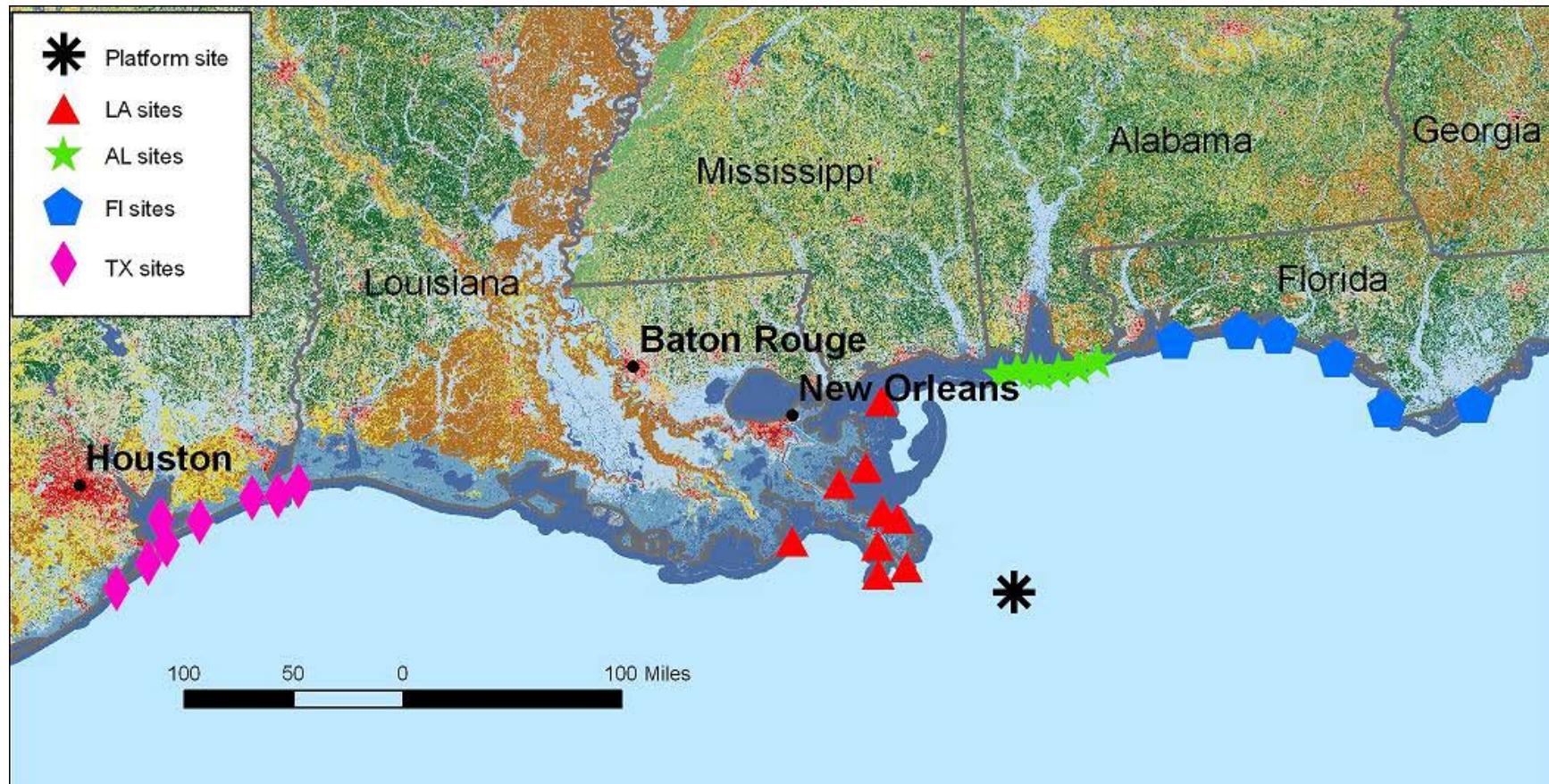
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## ATTACHMENT 1 -- USGS Sitelist **NOT CURRENT**

state	NAME	DESCR	X_COORD	Y_COORD
AL	MS 1		-88.315933	30.226856
AL	AL 7		-87.567680	30.271124
AL	AL 6		-87.725021	30.242123
AL	AL 5		-87.869324	30.228092
AL	AL 4		-88.016716	30.224562
AL	AL 3		-88.077660	30.246395
AL	AL 2		-88.185959	30.248838
FL	FL-6	St. George Island	-84.734375	29.725262
FL	FL-5	Cape San Blas	-85.405228	29.764185
FL	FL-4	St. Andrews State Park	-85.741882	30.129889
FL	FL-3	Grayton Beach State Park	-86.167290	30.327757
FL	FL-2	Henderson Beach State Park	-86.447060	30.383308
FL	FL-1	Gulf Islands National Seashore near Navarre	-86.958992	30.362970
TX	TX_Galveston Bay Inlet		-94.730095	29.364334
TX	TX_Galveston Island		-94.868950	29.243816
TX	TX_San Luis Pass		-95.111908	29.083078
TX	TX_East Sabine Pass		-93.720695	29.739483
TX	TX_Morgans Point		-94.768623	29.534523
TX	TX_Bolivar_Anahuac		-94.472946	29.519608
TX	TX_Sea Rim		-94.072533	29.666912
TX	TX_Texas Point		-93.878426	29.679729
LA	Barataria	USGS Sample	-89.995049	29.229200
LA	Tiger Pass	COE Sample	-89.348206	29.161694
LA	SW Pass	USGS & COE Samples	-89.361786	28.973206
LA	South Pass	USGS & COE Samples	-89.145081	29.006746
LA	Main Pass	USGS Sample	-89.185173	29.335800
LA	Baptist Collet	COE Sample	-89.298325	29.384251
LA	Breton	USGS Sample	-89.610481	29.593357
LA	MRGO	USGS & COE Samples	-89.396217	29.686941
LA	Grand Pass	USGS Sample	-89.246140	30.118803

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ATTACHMENT 2 -- USGS SAMPLE DESCRIPTIONS/METHODS FOR GOM DATA COLLECTION **NOT CURRENT**



# USGS National Water Quality Laboratory, Lakewood, CO

## Sample Schedule details

Schedule 5507										<a href="#">Add To Favorites</a>
Analyte	Lab Code	Parameter Code	M	CAS Number	RL	Unit	RL Type	C A	Container	
Dibenz[a,h]anthracene		64116	GCM13	53-70-3	50	ug/kg	irl		BGC	
Chrysene		64115	GCM13	218-01-9	50	ug/kg	irl		BGC	
2-Methylnanthracene		64105	GCM13	613-12-7	50	ug/kg	irl		BGC	
4H-Cyclopenta[def]phenanthrene		64106	GCM13	203-64-5	50	ug/kg	irl		BGC	
Anthraquinone		63181	GCM13	84-65-1	50	ug/kg	irl		BGC	
Fluorene		64107	GCM13	86-73-7	50	ug/kg	irl		BGC	
1-Methyl-9H-fluorene		64100	GCM13	1730-37-6	50	ug/kg	irl		BGC	
Acenaphthene		64108	GCM13	83-32-9	50	ug/kg	irl		BGC	
Acenaphthylene		64109	GCM13	208-96-8	50	ug/kg	irl		BGC	
Pentachloroanisole		64119	GCM13	1825-21-4	50	ug/kg	irl		BGC	
Anthracene		63180	GCM13	120-12-7	50	ug/kg	irl		BGC	
Benz[a]anthracene		63610	GCM13	56-55-3	50	ug/kg	irl		BGC	
1,2,4-Trichlorobenzene		64095	GCM13	120-82-1	50	ug/kg	irl		BGC	
Hexachlorobenzene		63631	GCM13	118-74-1	50	ug/kg	irl		BGC	
Nitrobenzene-d5		90755	GCM13	4165-60-0		pct	irl		BGC	
Pentachloronitrobenzene		63650	GCM13	82-68-8	50	ug/kg	irl		BGC	
Benzo[a]pyrene		63183	GCM13	50-32-8	50	ug/kg	irl		BGC	
Benzo[b]fluoranthene		64111	GCM13	205-99-2	50	ug/kg	irl		BGC	
Benzo[e]pyrene		64112	GCM13	192-97-2	50	ug/kg	irl		BGC	
Benzo[ghi]perylene		64113	GCM13	191-24-2	50	ug/kg	irl		BGC	
Benzo[k]fluoranthene		64114	GCM13	207-08-9	50	ug/kg	irl		BGC	
2-Fluorobiphenyl		90754	GCM13	321-60-8		pct	irl		BGC	
C1-Alkylated benzopyrene/perylene		64142	GCM13		50	ug/kg	irl		BGC	
C1-Alkylated benz[a]anthracene/chrysene		64137	GCM13		50	ug/kg	irl		BGC	
C1-Alkylated fluoranthene/pyrene		64132	GCM13		50	ug/kg	irl		BGC	
C1-alkylated naphthalene		64122	GCM13		50	ug/kg	irl		BGC	
C1-Alkylated phenanthracene/anthracene		64127	GCM13		50	ug/kg	irl		BGC	
C2-Alkylated benzopyrene/perylene		64143	GCM13		50	ug/kg	irl		BGC	

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C2-Alkylated benz[a]anthracene/chrysene		64138	GCM13		50	ug/kg	irl	BGC
C2-Alkylated fluoranthene/pyrene		64133	GCM13		50	ug/kg	irl	BGC
C2-alkylated naphthalene		64123	GCM13		50	ug/kg	irl	BGC
C2-Alkylated phenanthracene/anthracene		64128	GCM13		50	ug/kg	irl	BGC
C3-Alkylated benzopyrene/perylene		64144	GCM13		50	ug/kg	irl	BGC
C3-Alkylated benz[a]anthracene/chrysene		64139	GCM13		50	ug/kg	irl	BGC
C3-Alkylated fluoranthene/pyrene		64134	GCM13		50	ug/kg	irl	BGC
C3-alkylated naphthalene		64124	GCM13		50	ug/kg	irl	BGC
C3-Alkylated phenanthracene/anthracene		64129	GCM13		50	ug/kg	irl	BGC
C4-Alkylated benzopyrene/perylene		64145	GCM13		50	ug/kg	irl	BGC
C4-Alkylated benz[a]anthracene/chrysene		64140	GCM13		50	ug/kg	irl	BGC
C4-Alkylated fluoranthene/pyrene		64135	GCM13		50	ug/kg	irl	BGC
C4-alkylated naphthalene		64125	GCM13		50	ug/kg	irl	BGC
C4-Alkylated phenanthracene/anthracene		64130	GCM13		50	ug/kg	irl	BGC
C5-Alkylated benzopyrene/perylene		64146	GCM13		50	ug/kg	irl	BGC
C5-Alkylated benz[a]anthracene/chrysene		64141	GCM13		50	ug/kg	irl	BGC
C5-Alkylated fluoranthene/pyrene		64136	GCM13		50	ug/kg	irl	BGC
C5-alkylated naphthalene		64126	GCM13		50	ug/kg	irl	BGC
C5-Alkylated phenanthracene/anthracene		64131	GCM13		50	ug/kg	irl	BGC
Carbazole		63194	B	86-74-8	50	ug/kg	irl	BGC
Fluoranthene		63208	GCM13	206-44-0	50	ug/kg	irl	BGC
Indeno[1,2,3-cd]pyrene		64118	GCM13	193-39-5	50	ug/kg	irl	BGC
Naphthalene		63220	GCM13	91-20-3	50	ug/kg	irl	BGC
1,2-Dimethylnaphthalene		64097	GCM13	573-98-8	50	ug/kg	irl	BGC
1,6-Dimethylnaphthalene		64099	GCM13	575-43-9	50	ug/kg	irl	BGC
2,3,6-Trimethylnaphthalene		64103	GCM13	829-26-5	50	ug/kg	irl	BGC
2,6-Dimethylnaphthalene		63167	GCM13	581-42-0	50	ug/kg	irl	BGC
2-Ethynaphthalene		64104	GCM13	939-27-5	50	ug/kg	irl	BGC
Perylene		64120	GCM13	198-55-0	50	ug/kg	irl	BGC
Phenanthrene		63224	GCM13	85-01-8	50	ug/kg	irl	BGC
1-Methylphenanthrene		64101	GCM13	832-69-9	50	ug/kg	irl	BGC
Phenanthridine		64121	GCM13	229-87-8	50	ug/kg	irl	BGC
bis(2-Ethylhexyl) phthalate		63187	GCM13	117-81-7	50	ug/kg	irl	BGC
Diethyl phthalate		63202	GCM13	84-66-2	50	ug/kg	irl	BGC

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Pyrene		63227	GCM13	129-00-0	50	ug/kg	irl		BGC
1-Methylpyrene		64102	GCM13	2381-21-7	50	ug/kg	irl		BGC
Sample weight, grams		91107	GCM13			g	irl		BGC
Terphenyl-d14		90756	GCM13	1718-51-0		pct	irl		BGC
Dibenzothiophene		64117	GCM13	132-65-0	50	ug/kg	irl		BGC

Excel Format

CAS Registry Number® is a Registered Trademark of the American Chemical Society. CAS recommends the verification of the CASRNs through CAS Client Services.

Values of "C" in the C A column denote NELAP Certified analytes

		Container Requirements															
Quantity	Bottle																
1	<b>100g BGC</b> <b>Description:</b> 1 L Glass jar, wide-mouth <b>Treatment and Preservation:</b> baked at 450 deg C by laboratory. DO NOT RINSE BOTTLE. Chill and maintain at 4 deg C, ship immediately																
References																	
<ol style="list-style-type: none"> <li><i>Memo - Method approval announcement</i> Approval of the new USGS National Water Quality Laboratory Analytical Method O-5506-06 for the Determination of Semivolatile Organic Compounds and Polycyclic Aromatic Hydrocarbons in Solids by Gas Chromatography/Mass Spectrometry by the Office of Water Quality, April 10, 2006</li> <li><i>TMR book 5, chap B3</i> Zaugg, S.D., Burkhardt, M.R., Burbank, T.L., Olsen, M.C., Iverson, J.L., and Schroeder, M.P., 2006, Determination of semivolatile organic compounds and polycyclic aromatic hydrocarbons in solids by gas chromatography/mass spectrometry: U.S. Geological Survey Techniques and Methods, book 5, chap. B3, 44p. <b>Method ID:</b> O-5506-06</li> </ol>																	

## Schedule 5506

**Description:** PAHs and other semi-volatile organics

**Price:** \$609.92

**Owner:** USGS - NATIONAL WATER-QUALITY

**Analyzing Laboratory(s):**

"USGS-National Water Quality Lab, Denver, CO "

Analyte▲	Lab Code	Parameter Code	M	CAS Number	RL	Unit	RL Type	C A	Container
Dibenz[a,h]anthracene		64116	GCM13	53-70-3	50	ug/kg	irl		BGC
Chrysene		64115	GCM13	218-01-9	50	ug/kg	irl		BGC
2-Methylnanthracene		64105	GCM13	613-12-7	50	ug/kg	irl		BGC
4H-Cyclopenta[def]phenanthrene		64106	GCM13	203-64-5	50	ug/kg	irl		BGC
Anthraquinone		63181	GCM13	84-65-1	50	ug/kg	irl		BGC
Fluorene		64107	GCM13	86-73-7	50	ug/kg	irl		BGC
1-Methyl-9H-fluorene		64100	GCM13	1730-37-6	50	ug/kg	irl		BGC
Acenaphthene		64108	GCM13	83-32-9	50	ug/kg	irl		BGC
Acenaphthylene		64109	GCM13	208-96-8	50	ug/kg	irl		BGC
Pentachloroanisole		64119	GCM13	1825-21-4	50	ug/kg	irl		BGC

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<b>Anthracene</b>		<b>63180</b>	<b>GCM13</b>	<b>120-12-7</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>Benz[a]anthracene</b>		<b>63610</b>	<b>GCM13</b>	<b>56-55-3</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>1,2,4-Trichlorobenzene</b>		<b>64095</b>	<b>GCM13</b>	<b>120-82-1</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>Hexachlorobenzene</b>		<b>63631</b>	<b>GCM13</b>	<b>118-74-1</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>Nitrobenzene-d5</b>		<b>90755</b>	<b>GCM13</b>	<b>4165-60-0</b>		<b>pct</b>	<b>irl</b>		<b>BGC</b>
<b>Pentachloronitrobenzene</b>		<b>63650</b>	<b>GCM13</b>	<b>82-68-8</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>Benzo[a]pyrene</b>		<b>63183</b>	<b>GCM13</b>	<b>50-32-8</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>Benzo[b]fluoranthene</b>		<b>64111</b>	<b>GCM13</b>	<b>205-99-2</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>Benzo[e]pyrene</b>		<b>64112</b>	<b>GCM13</b>	<b>192-97-2</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>Benzo[ghi]perylene</b>		<b>64113</b>	<b>GCM13</b>	<b>191-24-2</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>Benzo[k]fluoranthene</b>		<b>64114</b>	<b>GCM13</b>	<b>207-08-9</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>2-Fluorobiphenyl</b>		<b>90754</b>	<b>GCM13</b>	<b>321-60-8</b>		<b>pct</b>	<b>irl</b>		<b>BGC</b>
<b>Carbazole</b>		<b>63194</b>	<b>B</b>	<b>86-74-8</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>Fluoranthene</b>		<b>63208</b>	<b>GCM13</b>	<b>206-44-0</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>Indeno[1,2,3-cd]pyrene</b>		<b>64118</b>	<b>GCM13</b>	<b>193-39-5</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>Naphthalene</b>		<b>63220</b>	<b>GCM13</b>	<b>91-20-3</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>1,2-Dimethylnaphthalene</b>		<b>64097</b>	<b>GCM13</b>	<b>573-98-8</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>1,6-Dimethylnaphthalene</b>		<b>64099</b>	<b>GCM13</b>	<b>575-43-9</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>2,3,6-Trimethylnaphthalene</b>		<b>64103</b>	<b>GCM13</b>	<b>829-26-5</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>2,6-Dimethylnaphthalene</b>		<b>63167</b>	<b>GCM13</b>	<b>581-42-0</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>2-Ethynaphthalene</b>		<b>64104</b>	<b>GCM13</b>	<b>939-27-5</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>Perylene</b>		<b>64120</b>	<b>GCM13</b>	<b>198-55-0</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>Phenanthrene</b>		<b>63224</b>	<b>GCM13</b>	<b>85-01-8</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>1-Methylphenanthrene</b>		<b>64101</b>	<b>GCM13</b>	<b>832-69-9</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>Phenanthridine</b>		<b>64121</b>	<b>GCM13</b>	<b>229-87-8</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>bis(2-Ethylhexyl) phthalate</b>		<b>63187</b>	<b>GCM13</b>	<b>117-81-7</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>Diethyl phthalate</b>		<b>63202</b>	<b>GCM13</b>	<b>84-66-2</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>Pyrene</b>		<b>63227</b>	<b>GCM13</b>	<b>129-00-0</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>1-Methylpyrene</b>		<b>64102</b>	<b>GCM13</b>	<b>2381-21-7</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>Sample weight, grams</b>		<b>91107</b>	<b>GCM13</b>			<b>g</b>	<b>irl</b>		<b>BGC</b>
<b>Terphenyl-d14</b>		<b>90756</b>	<b>GCM13</b>	<b>1718-51-0</b>		<b>pct</b>	<b>irl</b>		<b>BGC</b>
<b>Dibenzothiophene</b>		<b>64117</b>	<b>GCM13</b>	<b>132-65-0</b>	<b>50</b>	<b>ug/kg</b>	<b>irl</b>		<b>BGC</b>
<b>Container Requirements</b>									
<b>Quantity</b>	<b>Bottle</b>								
1		<b>100g BGC</b>							
		<b>Description:</b> 1 L Glass jar, wide-mouth							
		<b>Treatment and Preservation:</b> baked at 450 deg C by laboratory. DO NOT RINSE BOTTLE. Chill and maintain at 4 deg C, ship immediately							
<b>References</b>									
1. <b>Memo - Method approval announcement</b> Approval of the new USGS National Water Quality Laboratory Analytical Method O-5506-06 for the Determination of Semivolatile Organic Compounds and Polycyclic Aromatic Hydrocarbons in Solids by Gas Chromatography/Mass Spectrometry by the Office of Water Quality, April 10, 2006									
2. <b>TMR book 5, chap B3</b> Zaugg, S.D., Burkhardt, M.R., Burbank, T.L., Olsen, M.C., Iverson, J.L., and Schroeder, M.P., 2006, Determination of									

# DRAFT

semivolatile organic compounds and polycyclic aromatic hydrocarbons in solids by gas chromatography/mass spectrometry: U.S. Geological Survey Techniques and Methods, book 5, chap. B3, 44p.  
**Method ID:** O-5506-06

## Schedule 1383

**Description:** Semivolatile compounds (base/neutral/acid - BNA), WWR

**Price:** \$492.02

**Owner:** USGS - NATIONAL WATER-QUALITY CENTRAL LAB-DENVER,

**Analyzing Laboratory(s):**

"USGS-National Water Quality Lab, Denver, CO "

Analyte▲	Lab Code	Parameter Code	M	CAS Number	RL	Unit	RL Type	C A	Container
Dibenz[a,h]anthracene		34556	GCM57	53-70-3	0.42	ug/L	lrl		GCC
Chrysene		34320	GCM57	218-01-9	0.33	ug/L	lrl		GCC
bis(2-chloroisopropyl) ether		34283	GCM57	108-60-1	0.14	ug/L	lrl		GCC
2,4-Dimethylphenol		34606	GCM56	105-67-9	0.8	ug/L	lrl		GCC
2-Fluorophenol		L2325		367-12-4		pct			GCC
4,6-Dinitro-2-methylphenol		34657	GCM56	534-52-1	0.76	ug/L	lrl		GCC
4-Bromophenylphenylether		34636	GCM57	101-55-3	0.24	ug/L	lrl		GCC
4-Chlorophenyl phenyl ether		34641	GCM57	7005-72-3	0.34	ug/L	lrl		GCC
Fluorene		34381	GCM57	86-73-7	0.33	ug/L	lrl		GCC
Acenaphthene		34205	GCM57	83-32-9	0.28	ug/L	lrl		GCC
Acenaphthylene		34200	GCM57	208-96-8	0.30	ug/L	lrl		GCC
Anthracene		34220	GCM57	120-12-7	0.39	ug/L	lrl		GCC
Benz[a]anthracene		34526	GCM57	56-55-3	0.26	ug/L	lrl		GCC
1,2,4-Trichlorobenzene		34551	GCM57	120-82-1	0.26	ug/L	lrl		GCC
Hexachlorobenzene		39700	GCM57	118-74-1	0.30	ug/L	lrl		GCC
1,3-Dichlorobenzene		34566	GCM57	541-73-1	0.22	ug/L	lrl		GCC
Nitrobenzene		34447	GCM57	98-95-3	0.26	ug/L	lrl		GCC
Nitrobenzene-d5		49280	GCM57	4165-60-0		pct			GCC
1,2-Dichlorobenzene		34536	GCM57	95-50-1	0.20	ug/L	lrl		GCC
1,4-Dichlorobenzene		34571	GCM57	106-46-7	0.22	ug/L	lrl		GCC
Benzidine		39120	GCM55	92-87-5	1000	ug/L	irl		GCC
3,3'-Dichlorobenzidine		34631	GCM55	91-94-1	0.42	ug/L	lrl		GCC
Benzo[a]pyrene		34247	GCM57	50-32-8	0.33	ug/L	lrl		GCC
Benzo[b]fluoranthene		34230	GCM57	205-99-2	0.30	ug/L	lrl		GCC
Benzo[ghi]perylene		34521	GCM57	191-24-2	0.38	ug/L	lrl		GCC
Benzo[k]fluoranthene		34242	GCM57	207-08-9	0.30	ug/L	lrl		GCC
2-Fluorobiphenyl		49279	GCM57	321-60-8		pct			GCC
bis(2-Chloroethyl)ether		34273	GCM57	111-44-4	0.30	ug/L	lrl		GCC
Hexachlorobutadiene		39702	GCM57	87-68-3	0.24	ug/L	lrl		GCC
Hexachlorocyclopentadiene		34386	GCM57	77-47-4	0.50	ug/L	lrl		GCC

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N-Nitrosodi-n-propylamine		34428	GCM57	621-64-7	0.4	ug/L	lrl		GCC
N-Nitrosodimethylamine		34438	GCM57	62-75-9	0.24	ug/L	lrl		GCC
N-Nitrosodiphenylamine		34433	GCM57	86-30-6	0.28	ug/L	lrl		GCC
Hexachloroethane		34396	GCM57	67-72-1	0.24	ug/L	lrl		GCC
Fluoranthene		34376	GCM57	206-44-0	0.30	ug/L	lrl		GCC
1,2-Diphenylhydrazine		82626	GCM55	122-66-7	0.30	ug/L	lrl		GCC
Indeno[1,2,3-cd]pyrene		34403	GCM57	193-39-5	0.38	ug/L	lrl		GCC
Isophorone		34408	GCM57	78-59-1	0.26	ug/L	lrl		GCC
4-Chloro-3-methylphenol		34452	GCM56	59-50-7	0.55	ug/L	lrl		GCC
bis(2-Chloroethoxy)methane		34278	GCM57	111-91-1	0.24	ug/L	lrl		GCC
Naphthalene		34696	GCM57	91-20-3	0.22	ug/L	lrl		GCC
2-Chloronaphthalene		34581	GCM57	91-58-7	0.16	ug/L	lrl		GCC
Phenanthrene		34461	GCM57	85-01-8	0.32	ug/L	lrl		GCC
Phenol		34694	GCM56	108-95-2	0.28	ug/L	lrl		GCC
2,4,6-Tribromophenol		90652	GCM57	118-79-6		pct			GCC
2,4,6-Trichlorophenol		34621	GCM56	88-06-2	0.34	ug/L	lrl		GCC
2,4-Dichlorophenol		34601	GCM56	120-83-2	0.36	ug/L	lrl		GCC
2,4-Dinitrophenol		34616	GCM56	51-28-5	1.4	ug/L	lrl		GCC
2-Chlorophenol		34586	GCM56	95-57-8	0.26	ug/L	lrl		GCC
2-Nitrophenol		34591	GCM56	88-75-5	0.40	ug/L	lrl		GCC
4-Nitrophenol		34646	GCM56	100-02-7	0.51	ug/L	lrl		GCC
Pentachlorophenol		39032	GCM56	87-86-5	0.6	ug/L	lrl		GCC
Phenol-d5		90630	GCM57	4165-62-2		pct			GCC
bis(2-Ethylhexyl) phthalate		39100	GCM57	117-81-7	2	ug/L	irl		GCC
Butylbenzyl phthalate		34292	GCM57	85-68-7	1.8	ug/L	irl		GCC
Di-n-butyl phthalate		39110	GCM57	84-74-2	2	ug/L	irl		GCC
Diethyl phthalate		34336	GCM57	84-66-2	0.61	ug/L	irl		GCC
Dimethyl phthalate		34341	GCM57	131-11-3	0.36	ug/L	irl		GCC
Di-n-octyl phthalate		34596	GCM57	117-84-0	0.6	ug/L	irl		GCC
Pyrene		34469	GCM57	129-00-0	0.35	ug/L	irl		GCC
Sample volume		99855	GCM57			mL			GCC
set number, schedule 1383		99813	GCM57			no.			GCC
Terphenyl-d14		49278	GCM57	1718-51-0		pct			GCC
2,4-Dinitrotoluene		34611	GCM57	121-14-2	0.56	ug/L	lrl		GCC
2,6-Dinitrotoluene		34626	GCM57	606-20-2	0.4	ug/L	lrl		GCC
<b>Container Requirements</b>									
Quantity	Bottle								
1	1L GCC - This schedule consumes the entire container. <b>Description:</b> <b>Treatment and Preservation:</b> Baked amber glass bottle (60 mL or 125 mL or 500 mL or 1L based on sch). <b>SOME</b> GCCs must be filtered (see method title or reference or email Labhelp@usgs.gov). Do not rinse bottle. Fill to shoulder only. Chil. Maintain at 4 deg. C. Ship immediately. Use one-stop # N1162 ( 1 L) or N3600 (500 mL) GCC bottle with dechlorination reagent added for samples containing residual Cl. Residual Cl may be present in WWTP discharges and may bias results by degrading organic compounds.								
<b>References</b>									

# DRAFT

1. **OFR 93-125**

Fishman, M.J., ed., 1993, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory-- Determination of inorganic and organic constituents in water and fluvial sediments: U.S. Geological Survey Open-File Report 93-125, 217 p.

**Method ID:** O-3116-87

## Schedule 2021

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**Description:** NAWQA 85 VOCs, WWR, Note: GW=3x40ml, SW=4x40ml sample, Acid

**Price:** \$443.00

**Owner:** NAWQA

**Analyzing Laboratory(s):**

"USGS-National Water Quality Lab, Denver, CO "

Analyte▲	Lab Code	Parameter Code	M	CAS Number	RL	Unit	RL Type	C A	Container
1,2,3,4-Tetramethylbenzene		49999	GCM66	488-23-3	0.08	ug/L	lrl		GCV
1,2,3,5-Tetramethylbenzene		50000	GCM66	527-53-7	0.08	ug/L	lrl		GCV
2-Butanone		81595	GCM66	78-93-3	1.6	ug/L	lrl		GCV
trans-1,4-Dichloro-2-butene		73547	GCM66	110-57-6	0.36	ug/L	lrl		GCV
2-Hexanone		77103	GCM66	591-78-6	0.46	ug/L	lrl		GCV
4-Methyl-2-pentanone		78133	GCM66	108-10-1	0.32	ug/L	lrl		GCV
Acetone		81552	GCM66	67-64-1	3.4	ug/L	lrl		GCV
Acrylonitrile		34215	GCM66	107-13-1	0.8	ug/L	lrl		GCV
Benzene		34030	GCM66	71-43-2	0.026	ug/L	lrl		GCV
1,2,3-Trichlorobenzene		77613	GCM66	87-61-6	0.06	ug/L	lrl		GCV
1,2,3-Trimethylbenzene		77221	GCM66	526-73-8	0.06	ug/L	lrl		GCV
1,2,4-Trichlorobenzene		34551	GCM66	120-82-1	0.08	ug/L	lrl		GCV
1,4-Bromofluorobenzene		99834	GCM66	460-00-4		pct			GCV
Bromobenzene		81555	GCM66	108-86-1	0.022	ug/L	lrl		GCV
Chlorobenzene		34301	GCM66	108-90-7	0.016	ug/L	lrl		GCV
Ethylbenzene		34371	GCM66	100-41-4	0.036	ug/L	lrl		GCV
1,3-Dichlorobenzene		34566	GCM66	541-73-1	0.024	ug/L	lrl		GCV
Butylbenzene		77342	GCM66	104-51-8	0.08	ug/L	lrl		GCV
n-Propylbenzene		77224	GCM66	103-65-1	0.036	ug/L	lrl		GCV
1,2-Dichlorobenzene		34536	GCM66	95-50-1	0.028	ug/L	lrl		GCV
1,4-Dichlorobenzene		34571	GCM66	106-46-7	0.026	ug/L	lrl		GCV
sec-Butylbenzene		77350	GCM66	135-98-8	0.034	ug/L	lrl		GCV
tert-Butylbenzene		77353	GCM66	98-06-6	0.06	ug/L	lrl		GCV
Bromoethene		50002	GCM66	593-60-2	0.12	ug/L	lrl		GCV
Bromoform		32104	GCM66	75-25-2	0.1	ug/L	lrl		GCV
Hexachlorobutadiene		39702	GCM66	87-68-3	0.06	ug/L	lrl		GCV
Carbon disulfide		77041	GCM66	75-15-0	0.04	ug/L	lrl		GCV

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Tetrachloromethane		32102	GCM66	56-23-5	0.052	ug/L	lrl		GCV
Chloroform		32106	GCM66	67-66-3	0.03	ug/L	lrl		GCV
Isopropylbenzene		77223	GCM66	98-82-8	0.042	ug/L	lrl		GCV
1,1,1,2-Tetrachloroethane		77562	GCM66	630-20-6	0.04	ug/L	lrl		GCV
1,1,1-Trichloroethane		34506	GCM66	71-55-6	0.03	ug/L	lrl		GCV
1,1,2-Trichlorotrifluoroethane		77652	GCM66	76-13-1	0.034	ug/L	lrl		GCV
1,2-Dibromoethane		77651	GCM66	106-93-4	0.05	ug/L	lrl		GCV
1,2-Dichloroethane-d4		99832	GCM66	17060-07-0		pct			GCV
1,2-Dichloroethane		32103	GCM66	107-06-2	0.08	ug/L	lrl		GCV
Hexachloroethane		34396	GCM66	67-72-1	0.14	ug/L	lrl		GCV
1,1,2,2-Tetrachloroethane		34516	GCM66	79-34-5	0.14	ug/L	lrl		GCV
Chloroethane		34311	GCM66	75-00-3	0.06	ug/L	lrl		GCV
Diethyl ether		81576	GCM66	60-29-7	0.08	ug/L	lrl		GCV
Ethyl tert-butyl ether		50004	GCM66	637-92-3	0.032	ug/L	lrl		GCV
cis-1,2-Dichloroethylene		77093	GCM66	156-59-2	0.022	ug/L	lrl		GCV
Tetrachloroethylene		34475	GCM66	127-18-4	0.026	ug/L	lrl		GCV
trans-1,2-Dichloroethylene		34546	GCM66	156-60-5	0.018	ug/L	lrl		GCV
Trichloroethylene		39180	GCM66	79-01-6	0.022	ug/L	lrl		GCV
1,1-Dichloroethane		34496	GCM66	75-34-3	0.044	ug/L	lrl		GCV
Tetrahydrofuran		81607	GCM66	109-99-9	1.4	ug/L	lrl		GCV
Diisopropyl ether		81577	GCM66	108-20-3	0.06	ug/L	lrl		GCV
m- and p-Xylene		85795	GCM66	179601-23-1	0.08	ug/L	lrl		GCV
1,3,5-Trimethylbenzene		77226	GCM66	108-67-8	0.032	ug/L	lrl		GCV
Ethyl methacrylate		73570	GCM66	97-63-2	0.14	ug/L	lrl		GCV
Methyl methacrylate		81597	GCM66	80-62-6	0.22	ug/L	lrl		GCV
Methyl acrylonitrile		81593	GCM66	126-98-7	0.26	ug/L	lrl		GCV
Bromochloromethane		77297	GCM66	74-97-5	0.06	ug/L	lrl		GCV
Bromodichloromethane		32101	GCM66	75-27-4	0.034	ug/L	lrl		GCV
Dibromochloromethane		32105	GCM66	124-48-1	0.12	ug/L	lrl		GCV
Dichlorodifluoromethane		34668	GCM66	75-71-8	0.1	ug/L	lrl		GCV
Trichlorofluoromethane		34488	GCM66	75-69-4	0.08	ug/L	lrl		GCV
Methyl acrylate		49991	GCM66	96-33-3	0.56	ug/L	lrl		GCV
Bromomethane		34413	GCM66	74-83-9	0.2	ug/L	lrl		GCV
Chloromethane		34418	GCM66	74-87-3	0.14	ug/L	lrl		GCV
Methyl iodide		77424	GCM66	74-88-4	0.26	ug/L	lrl		GCV
tert-Butyl methyl ether		78032	GCM66	1634-04-4	0.1	ug/L	lrl		GCV
Dibromomethane		30217	GCM66	74-95-3	0.05	ug/L	lrl		GCV
Dichloromethane		34423	GCM66	75-09-2	0.038	ug/L	lrl		GCV
Naphthalene		34696	GCM66	91-20-3	0.18	ug/L	lrl		GCV
o-Xylene		77135	GCM66	95-47-6	0.032	ug/L	lrl		GCV
4-Isopropyl-1-methylbenzene		77356	GCM66	99-87-6	0.06	ug/L	lrl		GCV
1,2,3-Trichloropropane		77443	GCM66	96-18-4	0.12	ug/L	lrl		GCV

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<b>1,3-Dichloropropane</b>		<b>77173</b>	<b>GCM66</b>	<b>142-28-9</b>	0.06	ug/L	lrl		<b>GCV</b>
<b>2,2-Dichloropropane</b>		<b>77170</b>	<b>GCM66</b>	<b>594-20-7</b>	0.06	ug/L	lrl		<b>GCV</b>
<b>1,2-Dibromo-3-chloropropane</b>		<b>82625</b>	<b>GCM66</b>	<b>96-12-8</b>	0.34	ug/L	lrl		<b>GCV</b>
<b>1,1-Dichloropropene</b>		<b>77168</b>	<b>GCM66</b>	<b>563-58-6</b>	0.03	ug/L	lrl		<b>GCV</b>
<b>3-Chloropropene</b>		<b>78109</b>	<b>GCM66</b>	<b>107-05-1</b>	0.08	ug/L	lrl		<b>GCV</b>
<b>cis-1,3-Dichloropropene</b>		<b>34704</b>	<b>GCM66</b>	<b>10061-01-5</b>	0.1	ug/L	lrl		<b>GCV</b>
<b>trans-1,3-Dichloropropene</b>		<b>34699</b>	<b>GCM66</b>	<b>10061-02-6</b>	0.14	ug/L	lrl		<b>GCV</b>
<b>1,2-Dichloropropane</b>		<b>34541</b>	<b>GCM66</b>	<b>78-87-5</b>	0.026	ug/L	lrl		<b>GCV</b>
<b>1,2,4-Trimethylbenzene</b>		<b>77222</b>	<b>GCM66</b>	<b>95-63-6</b>	0.032	ug/L	lrl		<b>GCV</b>
<b>Set number</b>		<b>99827</b>	<b>GCM66</b>		no.				<b>GCV</b>
<b>Styrene</b>		<b>77128</b>	<b>GCM66</b>	<b>100-42-5</b>	0.03	ug/L	lrl		<b>GCV</b>
<b>tert-Pentyl methyl ether</b>		<b>50005</b>	<b>GCM66</b>	<b>994-05-8</b>	0.06	ug/L	lrl		<b>GCV</b>
<b>Toluene</b>		<b>34010</b>	<b>GCM66</b>	<b>108-88-3</b>	0.018	ug/L	lrl		<b>GCV</b>
<b>2-Chlorotoluene</b>		<b>77275</b>	<b>GCM66</b>	<b>95-49-8</b>	0.028	ug/L	lrl		<b>GCV</b>
<b>o-Ethyl toluene</b>		<b>77220</b>	<b>GCM66</b>	<b>611-14-3</b>	0.032	ug/L	lrl		<b>GCV</b>
<b>4-Chlorotoluene</b>		<b>77277</b>	<b>GCM66</b>	<b>106-43-4</b>	0.042	ug/L	lrl		<b>GCV</b>
<b>Toluene-d8</b>		<b>99833</b>	<b>GCM66</b>	<b>2037-26-5</b>		pct			<b>GCV</b>
<b>Vinyl chloride</b>		<b>39175</b>	<b>GCM66</b>	<b>75-01-4</b>	0.06	ug/L	lrl		<b>GCV</b>
<b>1,1,2-Trichloroethane</b>		<b>34511</b>	<b>GCM66</b>	<b>79-00-5</b>	0.046	ug/L	lrl		<b>GCV</b>
<b>1,1-Dichloroethylene</b>		<b>34501</b>	<b>GCM66</b>	<b>75-35-4</b>	0.022	ug/L	lrl		<b>GCV</b>
<b>Container Requirements</b>									
<b>Quantity</b>	<b>Bottle</b>								
3	<b>40mL GCV</b> - This schedule consumes the entire container. <b>Description:</b> <b>Treatment and Preservation:</b> 40 mL Glass amber septum vial. DO NOT RINSE VIAL. Completely fill vial with sample to exclude air bubbles. Preserve all volatiles samples <b>except</b> samples for Schedules 1306 and 4024 adjusting sample with 1:1 HCl/H <sub>2</sub> O solution to a pH of 2. If free chlorine is present, first add 25 mg of ascorbic acid to each vial before filling with sample. Then fill with sample and adjust the sample to a pH of 2. Protect sample from sunlight. Store at 4 deg C. Ship immediately.								
<b>References</b>									
1.	<b>OFR 97-829</b> Brooke F. Connor, Donna L. Rose, Mary C. Noriega, Lucinda Murtagh and Sonja R. Abney <b>Method ID:</b> O-4127-96								

# DRAFT

Lab Code 2188								Add To Favorites	
Parameter Name Lab Code Parameter Code M CAS Number RL Unit   RL Code C A									
Nitrogen, ammonia as N	2188	00610	CL017	7664-41-7	0.04	mg/L	lrl		
Container Requirements									
<b>125mL WCA</b> <b>Description:</b> 125 mL Plain (translucent) polyethylene bottle, Use unfiltered sample to rinse bottles <b>Treatment and Preservation:</b> acidify with 1 mL of 4.5N (4.5 normal) sulfuric acid (H <sub>2</sub> S <sub>0</sub> 4), chill and maintain at 4 deg C, ship immediately.									
References									
1. <b>EPA 350.1</b> Determination of Ammonia Nitrogen by Semi-Automated Colorimetry Revision 2.0, Methods for the Determination of Inorganic Substances in Environmental Samples <b>Method ID:</b> 350.1									

# DRAFT

Lab Code 1986								Add To Favorites
Parameter Name	Lab Code	Parameter Code	M	CAS Number	RL	Unit	RL Code	C A
nitrogen, ammonia + organic nitrogen	1986	00625	KJ008	17778-88-0	0.10	mg/L	lrl	

# DRAFT

Lab Code 1984								Add To Favorites	
Parameter Name	Lab Code	Parameter Code	M	CAS Number	RL	Unit	RL Code	C A	
Phosphorus	1984	00665	KJ009	7723-14-0	0.04	mg/L	Irl		

# DRAFT

Lab Code 96								Add To Favorites
Parameter Name	Lab Code	Parameter Code	M	CAS Number	RL	Unit	RL Code	C A
MBAS	96	38260	SPEC2		0.10	mg/L	lrl	
<b>Container Requirements</b>								
<b>250mL MBAS</b> - This test consumes the entire container.								
<b>Description:</b>								
<b>Treatment and Preservation:</b> 250 mL Polyethylene bottle. Use unfiltered sample to rinse bottles, then chill collected sample and maintain at 4 deg C. ship immediately Dedicated bottle for labcode 96								
<b>References</b>								
1. <b>OFR 95-189</b> Burkhardt, M.R., Cinotto, P.J., Frahm, G.W., Woodworth, M.T., and Pritt, J.W., 1995, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory--Determination of methylene blue active substances by spectrophotometry: U.S. Geological Survey Open-File Report 95-189, 20 p. <b>Method ID:</b> O-3128-95								

7 May 2010

## NWQL Catalog

Schedule 2317

[Add To Favorites](#)**Description:** Metals for Gulf of Mexico Oil Spill**Price:** \$268.00**Owner:** USGS - NATIONAL WATER-QUALITY**Analyzing Laboratory(s):**

"USGS-National Water Quality Lab, Denver, CO "

Analyte	Lab Code	Parameter Code	M	CAS Number	RL	Unit	RL Type	C A	Container
Aluminum	2351	01105	PLA15	7429-90-5	50	ug/L	mrl		RA
Arsenic	3123	01002	PLM11	7440-38-2	0.18	ug/L	lrl		RA
Barium	2352	01007	PLA15	7440-39-3	0.6	ug/L	lrl		RA
Beryllium	2353	01012	PLA15	7440-41-7	0.38	ug/L	lrl		RA
Cadmium	2376	01027	PLM47	7440-43-9	0.04	ug/L	lrl		RA
Calcium	2356	00916	PLA15	7440-70-2	0.04	mg/L	lrl		RA
Chromium	3127	01034	PLM11	7440-47-3	0.42	ug/L	lrl		RA
Cobalt	3125	01037	PLM11	7440-48-4	0.04	ug/L	lrl		RA
Copper	2358	01042	PLA15	7440-50-8	3.8	ug/L	lrl		RA
Digestion for trace metals	1735	99870	00144			no.	mrl		RA
ICP Mass Spectrometry (ICPMS) setup	2182	L2182				unsp	mrl		RA
Inductively coupled plasma (ICP) setup	2180	L2180				unsp	lrl		RA
Iron	2359	01045	PLA15	7439-89-6	9.2	ug/L	lrl		RA
Lead	2380	01051	PLM48	7439-92-1	0.06	ug/L	lrl		RA
Lithium	2361	01132	PLA15	7439-93-2	0.08	ug/L	lrl		RA
Magnesium	2362	00927	PLA15	7439-95-4	0.008	mg/L	lrl		RA
Manganese	2363	01055	PLA15	7439-96-5	0.50	ug/L	lrl		RA
Molybdenum	2383	01062	PLM48	7439-98-7	0.1	ug/L	lrl		RA
Nickel	3131	01067	PLM11	7440-02-0	0.36	ug/L	lrl		RA
pH, laboratory	68	00403	EL006		0.1	pH	mrl		RU
Potassium	2775	00937	PLO01	7440-09-7	0.08	mg/L	lrl		RA
Selenium	3133	01147	PLM11	7782-49-2	0.10	ug/L	lrl		RA
Silver	2386	01077	PLM48	7440-22-4	0.016	ug/L	lrl		RA
Sodium	2368	00929	PLA15	7440-23-5	0.24	mg/L	lrl		RA
specific conductance, laboratory	69	90095	WHT03		5	uS/cm	mrl		RU
Strontium	2369	01082	PLA15	7440-24-6	0.6	ug/L	lrl		RA

# DRAFT

Zinc	2371	01092	PLA15	7440-66-6	4	ug/L	lrl	RA
Lab Code 69 may only be deleted when the field conductivity value is provided.								

## Excel Format

CAS Registry Number® is a Registered Trademark of the American Chemical Society. CAS recommends the verification of the CASRNs through CAS Client Services.

Values of "C" in the C A column denote NELAP Certified analytes

		Container Requirements
Quantity	Bottle	
1	<b>250mL RA</b> <b>Description:</b> 250 mL Polyethylene bottle, acid-rinsed <b>Treatment and Preservation:</b> Use unfiltered sample to rinse bottles, then acidify collected sample with nitric acid (HNO3) to pH < 2	
1	<b>100mL RU</b> <b>Description:</b> <b>Treatment and Preservation:</b> 250 or 500 mL Polyethylene bottle, Use unfiltered sample to rinse bottles	

## References

1. **OFR 98-165**  
Garbarino, J.R., and Struzeski, T.M., 1998, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory -- Determination of elements in whole-water digests using inductively coupled plasma-optical emission spectrometry and inductively coupled plasma-mass spectrometry: U.S. Geological Survey Open-File Report 98-165, 101 p.  
**Method ID:** I-4471-97
2. **TWRI B5 A1/89**  
Fishman, M.J., and Friedman, L.C., 1989, Methods for determination of inorganic substances in water and fluvial sediments: U.S. Geological Survey Techniques of Water-Resources Investigations, book 5, chap. A1, 545 p.  
**Method ID:** I-3630-85
3. **TWRI B5-A1/89**  
Fishman, M.J., and Friedman, L.C., 1989, Methods for determination of inorganic substances in water and fluvial sediments: U.S. Geological Survey Techniques of Water-Resources Investigations, book 5, chap. A1, 545 p.  
**Method ID:** I-2781-85 , I-2587-89
4. *Memo - Method approval announcement*  
Approval of a Water Quality Analytical Method for the Determination of Elements in Natural Water, Biota, Sediment, and Soil Samples Using Collision/Reaction Cell Inductively Coupled Plasma-Mass Spectrometry, November 3, 2005 (revised)
5. **OFR 96-225**  
Hoffman, G.L., Fishman, M.J., and Garbarino, J.R., 1996, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory--In-bottle acid digestion of whole-water samples: U.S. Geological Survey Open-File Report 96-225, 28 p.  
**Method ID:** I-3486-95
6. *TMR Book 5, Sec B, Chap 1*  
Garbarino, J.R., Kanagy, L.K., and Cree, M.E., 2006, Determination of elements in natural-water, biota, sediment and soil samples using collision/reaction cell inductively coupled plasma-mass spectrometry: U.S. Geological Survey Techniques and Methods, book 5, sec. B, chap.1, 88 p.  
**Method ID:** I-4020-05

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For information, comments, or questions send email to [labhelp@usgs.gov](mailto:labhelp@usgs.gov)

# DRAFT

## **Columbia Environmental Research Center (CERC) Laboratory SEDIMENT POREWATER TOXICITY USING SEA URCHINS**

Sediments will be collected as described for Method 1 above. The sediments will be held refrigerated until porewater extractions can be performed as soon as possible after collection. The toxicity of the pore waters will be determined using the sea urchin fertilization and embryological development tests with *Arbacia punctulata* (Carr and Nipper, 2003). These tests are sensitive, rapid and cost effective and have been used in numerous NOAA Status and Trends (NS&T) and EPA EMAP studies over the past two decades including the post-Katrina surveys at the NS&T and EMAP sites in Louisiana, Mississippi, and Alabama.

### **Reference**

Carr, R.S. and M. Nipper (eds.). 2003. *Porewater Toxicity Testing: Biological, Chemical, and Ecological Considerations*, Pensacola, FL, SETAC Press, 346 pp.